

## **Outputs and Interactions - Surface and Microanalysis Science Division**

### **1. Publications**

#### **1a. Publications in Print**

Blevens, L.G., Fernandez, M.G., Mulholland, G.W., Davis, R.W., Moore, E.F., Steel, E.B., and Scott, J.H., "*Cosmic: Carbon Monoxide and Soot in Microgravity Inverse Combustion*," in Proc. of Sixth International Microgravity Combustion Workshop, NASA Glenn Research Center (2001), pg. 177.

Buntin, S.A., Robey, S.W., Michaels, C.A., and Stranick, S.J., "*Multispectral Probes for Materials and Chemical Analysis*," in Proc. of CombiCat2001, The Catalyst Resources Group (2001).

Carasso, A.A., Bright, D.S., and Vladar, A.E., "*APEX Method and Real-Time Blind Deconvolution of Scanning Electron Microscope Imagery*," *Optical Engineering* 41, 1-16, (2002).

Chi, P.H., Simons, D.S., McKinley, J.M., Stevie, F.A., and Granger, C.N., "*High Precision Measurements of Arsenic and Phosphorous Implantation Dose in Silicon by Secondary Ion Mass Spectrometry*," *J. Vac. Sci. Technol. A* 20, 688-692 (2002).

Coakley, K.J., Chen-Mayer, H., Lamaze, G.P., Simons, D.S., and Thompson, P.E., "*Calibration of a Stopping Power Model for Silicon Based on Analysis of Neutron Depth Profiling and Secondary Ion Mass Spectrometry Measurements*," *Nucl. Inst. Meth. Phys. Res. B* 192, 349-359 (2002).

Conny, J.M. and Slater, J.F., "*Black Carbon and Organic Carbon in Aerosol Particles from Crown Fires in the Canadian Boreal Forest*," *J. Geophys. Res.* 107, 10.1029/2001JD001528 (2002).

Currie, L.A., "*Detection and Quantification Limits: Basic Concepts, International Harmonization, and Outstanding Issues*," Division of Environmental Chemistry, (American Chemical Society, extended abstracts) Vol. 42, 642-649 (2002).

Currie, L.A., Benner, Jr., B.A., Cachier, H., Cary, R., Chow, J.C., Druffel, E.R.M., Eglinton, T.I., Gustafsson, O., Hartmann, P.C., Hedges, J.I., Kessler, J.D., Kirchstetter, T.W., Klinedinst, D.B., Klouda, G.A., Marolf, J.V., Masiello, C.A., Novakov, T., Pearson, A., Prentie, K.M., Puxbaum, H., Quinn, J.G., Reddy, C.M., Schmid, H., Slater, J.F., Watson, J., and Wise, S.A., "*A Critical Evaluation of Interlaboratory Data on Total, Elemental, and Isotopic Carbon in the Carbonaceous Particle Reference Material, NIST SRM 1649a*," *J. Research of NIST*, 107, 279-298, May-June 2002.

Danzer, K., Otto, M., and Currie, L.A., "*Guidelines for Calibration in Analytical Chemistry; Part 2: Multicomponent Calibration*," IUPAC Recommendations 2002)

Egelhoff, W.F., Jr., Chen, P.J., Powell, C.J., and McMichael, R.D., “**Surface and Interface Effects in the Growth of Giant Magnetoresistance Spin Valves for Ultrahigh-Density Data-Storage Applications**,” *Prog. Surf. Science* 67, 355-364 (2001).

Egelhoff, W.F., Jr., Gan, L., Chen, P.J., Powell, C.J., Fry, R.D., McMichael, R.D., Beach, G., Martien, D., and Berkowitz, A.E., “**Detection of Pinholes in Ultrathin Films by Magnetic Coupling**,” in Applications of Ferromagnetic and Optical Materials, Storage, and Magnetolectronics, edited by H.J. Borg, K. Bussmann, W.F. Egelhoff, Jr., L. Hesselink, S.A. Majetich, E.S. Murdock, B.J.H. Stadler, M. Vasquez, M. Wuttig, and J.Q. Xiao, *Materials Research Society Proceedings*, Vol. 674, T1.2.1-T1.2.5 (2001).

Etz, E.S., Roberson, S.V., and Gillen, J.G., “**Raman Microspectroscopy of Some High Explosives Revisited**,” *Microscopy and Microanalysis 2002*, Volume 8, Supplement 2, *Proceedings*, Cambridge University Press (2002).

Girvin, S.M., and Jach, T., “**Formalism for the Quantum Hall Effect: Hilbert Space of Analytic Functions**,” in Physics in the Noncommutative World I: Field Theories, M. Li and Y.S. Wu, Eds., Rinton Press, Princeton (2002).

Jablonski, A. and Powell, C.J., “**The Electron Attenuation Length Revisited**,” *Surface Sci. Repts.* 47, 33-92 (2002).

Jach, T., Bright, D.S., Durbin, S., Bakulin, A., Srajer, G., Haskel, D., Stagaescu, C., and Pedulla, J., “**Wide-Field X-Ray Microscopy with Kirkpatrick-Baez Optics**,” *Proceedings of the SPIE 46<sup>th</sup> Annual Symposium on Optical Science and Technology*, pp. 38-44 (2001).

Klinedinst, D.B. and Currie, L.A., “**Radiocarbon Blank Correction: Methodologies and Limitations in a Major Urban Study of Carbonaceous Aerosols**,” *Nucl. Inst. Meth. Phys. Res. B* 172, 545-550 (2000).

Klouda, G.A., Lewis, C.W., Hidy, G., Eatough, D., Conny, J., and Hildemann, L., “**Radiocarbon Measurements of Secondary Organic Aerosol-Relevant Fractions for Source Attribution**,” Abstract to the Secondary Organic Aerosols Research Strategy to Apportion Biogenic/Anthropogenic Sources of SOA, an Outcome of the First Secondary Organic Aerosols Workshop, February 4-5, 2002, p. 77-78 (2002).

Klouda, G.A., Lewis, C.W., Stiles, D.C., Marolf, J.L., Ellenson, W.D., and Lonneman, W.A., “**Biogenic Contributions to Atmospheric Volatile Organic Compounds in Azusa, California**,” *J. Geophys. Res.* 107, 10.1029/2001JD000758, ACH 7-1 to 7-14 (2002).

Lee, A.Y., Blakeslee, D.M., Powell, C.J., and Rumble, J.R., Jr., “**Development of the Web-Based NIST X-Ray Photoelectron Spectroscopy (XPS) Database**,” *Data Science Journal* 1, 1-12 (2002).

Levin, I., Chan, J., Scott, J.H., Farber, L., Vanderah, T., and Maslar, J., "**Complex Polymorphic Behavior and Dielectric Properties of Perovskite-Related Sr ( $Sr_{1/3}, Nb_{2/3}O_3$ )**," J. Solid State Chem. 166(1), 24-41 (2002) doi:10.1006/jssc.2002.9548.

Litorja, M. and Buntin, S.A., "**The Oxidation of Deuterium-, Acetylene- and Ethylene-Terminated Si(100) by Atomic Oxygen**," J. Vac. Sci. Technol. A 20, 76-83 (2002).

Masiello, E.R.M., Druffel, E.R.M., and Currie, L.A., "**Radiocarbon Measurements of Black Carbon in Aerosols and Ocean Sediments**," Geochim. Cosmochim. Acta 66, 1025-1036 (2002).

Menyhard, M., Zsolt, G., Chen, P.J., Powell, C.J., McMichael, R.D., and Egelhoff, W.F., Jr., "**Structural Effects in the Growth of Giant Magnetoresistance (GMR) Spin Valves**," Appl. Surf. Science 180, 315-321 (2001).

Newbury, D.E., "**Low-Overvoltage Microanalysis: An Alternative High Resolution Strategy to Low-Voltage Microanalysis**," Microsc. Microanal. 8 (Supp 2: proceedings) pp. 434-435 (2002).

Newbury, D.E., "**Standardless Quantitative Electron Beam X-Ray Microanalysis: The Situation Remains Caveat Emptor!**," Microsc. Microanal. 8 (Supp 2: proceedings) p. 1464 (2002).

Paul, R.L. and Simons, D.S., "**Calibration of Phosphorus Implantation Dose in Silicon by Radiochemical Neutron Activation Analysis**," in Silicon Front-End Junction Formation Technologies, Materials Research Society, Warrendale, PA, 2002, pp. 291-296.

Powell, C.J., "**Summary of ASTM Practice E 2108-00 for Calibration of the Electron Binding-Energy Scale of an X-Ray Photoelectron Spectrometer**," J. Vac. Sci. Tech. A 19, 2689-2690 (2001)

Powell, C.J., Conny, J.M., and Jablonski, A., "**Some Issues in Quantitative X-Ray Photoelectron Spectroscopy and Auger-Electron Spectroscopy**," Proceedings of Symposium on State-of-the-Art Application of Surf. & Interface Anal. Meth. to Environ. Mat. Inter. In Honor of J.E. Castle's 65<sup>th</sup> year. (The Electrochemical Society, Pennington, NJ, 2001), Vol. 2001-5, pp. 15-45.

Powell, C.J. and Jablonski, A., "**Influence of Elastic-Electron Scattering on Measurements of Silicon Dioxide Film Thicknesses by X-Ray Photoelectron Spectroscopy**," J. Vac. Sci. Tech. A 19, 2604-2611 (2001).

Powell, C.J. and Jablonski, A., "**Comparisons of Calculated and Measured Effective Attenuation Lengths for Silicon Dioxide Over a Wide Electron Energy Range**," Surf. Sci. 488, L547-L552 (2001).

Powell, C.J. and Jablonski, A., "***Electron Effective Attenuation Lengths for Applications in Auger-Electron Spectroscopy and X-Ray Photoelectron Spectroscopy,***" Surf. Interface Anal. 3, 211-229 (2002).

Powell, C.J. and Jablonski, A., "***The NIST Electron Effective-Attenuation-Length Database,***" J. Surf. Anal. 9, 322-325 (2002).

Reddy, C.M., Pearson, A., Xu, L., McNichol, A.P., Benner, Jr., B.A., Wise, S.A., Klouda, G.A., Currie, L.A., and Eglinton, T.I., "***Radiocarbon as a Tool to Apportion Sources of Polycyclic Aromatic Hydrocarbons and Black Carbon in Environmental Samples,***" Environ. Sci. Technol. 36, 1774-1782 (2002).

Roberson, S.V., "***Multifunctional TOF-Secondary Ion Mass Spectrometry: Combinatorial Mapping of Gradient Energy Substrates,***" Appl. Surf. Sci. 200, 150-164 (2002).

Robey, S.W., "***Kinetic Instabilities During Plasma Etching of GaAs(001),***" Phys. Rev. B, 65, 115306, (2002).

Scott, J.H., "***Characterization of Dielectric Films by Spectrum-Line Imaging,***" Second International Conference on Microelectronics and Interfaces, Advanced Emerging Metrology and Nanoscience, Emerging Metrology (2001).

Sivithanu, Y., Scott, J.H., Yang, J.C., and Mulholland, G.W., "***Kinetics and Structure of Superagglomerates Produced by Silane and Acetylene,***" Sixth International Microgravity Combustion Workshop, NASA(CP-2001-210826) 2001, 289-292.

Small, J.A., Michael, J.R., and Bright, D.S., "***Improving the Quality of Electron Backscatter Diffraction Patterns from Sub 500 nm Particles,***" J. Microscopy 206, 170-178 (2002).

Small, J.A., Newbury, D.E., and Armstrong, J.A., "***Electron-Induced X-Ray Emission,***" in Handbook of X-ray Spectrometry, 2<sup>nd</sup> edition, R. Van Grieken and A.A. Markowicz, eds., Marcel Dekker Inc., NY, pp. 811-926 (2002).

Small, J.A., Newbury, D.E., Scott, J.H.J., King, L., Nam, S.W., Irwin, K., Deiker, S., Barkan, S., and Iwanczyk, J., "***A Well Dressed Microscope: Practical Experience with Microcalorimeter and Silicon Drift Detector Systems,***" Microsc. Microanal. 8, 82-83 (2002).

Small, J.A., Newbury, D.E., Wollman, D.A., Nam, S.W., Hilton, G.C., Irwin, K.D., and Martinis, J.M., "***Energy Dispersive X-Ray Spectrometry by Microcalorimetry for the SEM,***" Mikrochim Acta 138, 265-274 (2002).

Stranick, S.J., D.B. Chase, and C.A. Michaels, "***Near-Field Vibrational Spectroscopy: Infrared and Raman Studies at High Spatial Resolution***," Amer. Phys. Rev. 5, 82 (2002).

Turner, S., "***Systematic Characterization of Reciprocal Space by SAED: Advantages of a Double-Tilt, Rotate Holder***," Microsc. Microanal. 8, 668CD (2002).

Turner, S. and Bright, D.S., "***Characterization of the Morphology of Faceted Particles by Transmission Electron Microscopy***," in Proc. of Materials Research Society, Nanophase and Nano Composite Materials, Vol. 703 (2002).

Verkouteren, J.R. and Wylie, A.G., "***Anomalous Optical Properties of Fibrous Tremolite, Actinolite, and Ferro-Actinolite***," American Mineralogist 87, 1090-1095 (2002).

Verkouteren, J.R., Windsor, E.S., Conny, J.M., Perkins, R.L., and Ennis, J.T., "***Analysis of Kaolinite/Chrysotile Mixtures by Ashing and X-Ray Diffraction***," Powder Diffraction 17, 196-201 (2002).

#### **1b. Manuscripts in review**

(manuscripts that have been approved by the NIST internal review process and submitted for publication, but have not yet appeared in print)

Armstrong, J.T., Marinenko, R.B., Levin, I., Blendell, J., Bouldin, C.P., Schenk, P.K., Ritter, J.J., and Kaiser, D.L., "***Fabrication and Electron Microprobe Characterization of Barium-Strontium-Titanate (BST) Films***," American Institute of Physics Special Publication (in press).

Blevens, L.G., Fletcher, R.A., Benner, B.A., Steel, E.B., and Mulholland, G.W., "***The Existence of Young Soot in the Exhaust of Inverse Diffusion Flames***," in Proc. of the 29<sup>th</sup> International Symposium of Combustion, April, 2002 (in press).

Currie, L.A., "***Detection and Quantification Concepts and Nomenclature: International Harmonization and Recommendations***," Proc. of the Portsmouth Detection/Quantification Workshop (Environmental Protection Agency), 2002 (in press).

Currie, L.A., "***The Remarkable Metrological History of <sup>14</sup>C Dating: From Ancient Egyptian Artifacts to Particles of Soot and Grains of Pollen***," The Czech Journal of Physics (2002) (in press).

Fahey, A.J., Roberson, S., Sehgal, A., and Karim, A., "***Combinatorial Mapping of Gradient Energy Substrates***," Appl. Surf. Sci. (in press).

Fahey, A.J. and Gillen, J.G., "**Secondary Ion Mass Spectrometry Isotope Ratio Data of Uranium Oxide Particles and Detection of Groupings,**" Int. J. Mass Spectrometry & Ion Proc. (in press).

Gan, L., Gomez, R.D., Castillo, A., Chen, P.J., Powell, C.J., and Egelhoff, W.F., Jr., "**Ultra-Thin Aluminum Oxide as a Thermal Oxidation Barrier on Metal Films,**" Thin Solid Films (in press).

Gillen, J.G. and Fahey, A.J., "**Secondary Ion Mass Spectrometry Using Cluster Primary Ion Beams,**" Appl. Surf. Sci. (in press).

Hubbard, C.R., Enright, G., Gabe, E., Evans, H., Finger, L., DeTitta, G., Siegrist, T., Armstrong, J.T., Cook, L.P., Wong-Ng, W., and Leavenson, M.S., "**Standard Reference Material (SRM 1990) for Single Crystal Diffractometer Alignment,**" Advances in X-Ray Analysis (in press).

Jablonski, A. and Powell, C.J., "**Comparisons of Practical Attenuation Lengths Obtained from Different Algorithms for Application in XPS,**" Surface Sci. (in press).

Jablonski, A. and Powell, C.J., "**The Information Depth and the Mean Escape Depth in Auger Electron Spectroscopy and X-ray Photoelectron Spectroscopy,**" J. Vac. Sci. Technol. A (in press).

Kaiser, D.L., Ritter, J.J., Levin, I., Schenck, P.K., Blendell, J.E., Bouldin, C., Marinenko, R.B., Armstrong, J.T., and Beratan, H., "**Ultra-Thin Barium-Strontium-Titanate (BST) Thin Films Fabricated by Metalorganic Deposition,**" in Proc. of the 2000 Materials Research Society Fall Meeting (in press).

Lemire, K.R., Allen, D.T., Klouda, G.A., and Lewis, C.W., "**Fine Particulate Matter Source Attribution for Southeast Texas Using  $^{14}\text{C}/^{13}\text{C}$  Ratios,**" J. Geophysical Res. (in press).

Marinenko, R.B., "**Status of Microanalysis Standards at the National Institute of Standards and Technology,**" Microbeam Analysis 2000, Institute of Physics Conference Series No. 165 (in press).

Marinenko, R.B., Armstrong, R.B., Kaiser, D.L., Ritter, J.J., Schenk, P.K., Bouldin, C., and Levin, I., "**Manufacture and Electron Microprobe Characterization of Barium-Strontium-Titanate (BST) Films,**" in Proc. of the Characterization and Metrology for Ultra Large Scale Integration Technology (in press).

Michaels, C.A., Dentinger, C.J., Richter, L.J., Cavanagh, R.R., and Stranick, S.J., "**Nanoparticle Imaging with Near-Field Scanning Optical Microscopy,**" Materials Characterization (in press).

Powell, C.J., ***“Improvements in the Reliability of X-Ray Photoelectron Spectroscopy for Surface Analysis,”*** J. Chem. Education (in press).

Roberson, S.V., ***“Time-of-Flight Secondary Ion Mass Spectrometry (TOF-SIMS) for High-Throughput Characterization of Bio-Surfaces,”*** Appl. Surf. Sci. (in press).

Roberson, S.V., Sehgal, A., Fahey, A.J., and Karim, A., ***“Time-of-Flight Secondary Ion Mass Spectrometry (ToF-SIMS) for High Throughput Characterization of Bio-Surfaces,”*** International Conference on Secondary Ion Mass Spectrometry (in press).

Robins, L.H., Armstrong, J.T., Vaudin, M.D., Bouldin, C.P., Woicik, J.C., Paul, A.J., Thurber, W.R., Miyano, K.E., Parker, C.A., Roberts, J.C., Bedair, S.M., Piner, E.L., Reed, M.J., El-Masry, N.A., Donovan, S.M., and Pearton, S.J., ***“Optical and Structural Studies of Compositional Inhomogeneity in Strain-Relaxed Indium Gallium Nitride Films,”*** in Proc. of the 27<sup>th</sup> International Symp. on Compound Semiconductors (in press).

Scott, J.H. and Windsor, E.S., ***“Chemical and Structural Characterization of Ultrathin Dielectric Films Using Analytical Electron Microscopy,”*** Materials Research Society Symposium Proceedings (in press).

Scott, J.H., Windsor, E.S., Brady, D., Canterbury, J., Karamcheti, A., Chism, W., and Diebold, A., ***“Gate Dielectric Thickness Metrology Using Transmission Electron Microscopy,”*** in Proc. of the Characterization and Metrology for Ultra Large Scale Integration Technology (in press).

Slater, J.F., Currie, L.A., Dibb, J.E., and Benner, Jr., B.A., ***“Distinguishing the Relative Contribution of Fossil-Fuel and Biomass Combustion Aerosols Deposited at Summit, Greenland, Through Isotopic and Molecular Characterization of Insoluble Carbon,”*** Atmospheric Environment (in press).

Small, J.A., ***“Electron Backscatter Diffraction (EBSD) of Single Particles,”*** in Proc. of the Third International Conference on Microelectronics and Interfaces, American Vacuum Society, New York (in press).

Stranick, S.J., Chase, D.B., and Michaels, C.A., ***“Chemical Imaging with Scanning Near-Field Microscopy and Spectroscopy,”*** Rubber Chemistry and Technology (in press).

Stranick, S.J., Chase, D.B., and Michaels, C.A., ***“Near-Field Microscopy for Chemical and Material Analysis on the Nanoscale,”*** American Chemical Society PMSE (in press).

Verkouteren, J.R., Small, J.A., and Michael, J.R., ***“Comparison of Laboratory-Based X-Ray Microdiffraction and Electron Backscatter Diffraction for Phase Identification,”*** Advances in X-Ray Analysis 44, (in press).

Windsor, E.S., Carlton, R.A., Wight, S.A., and Gillen, G., “***Standard Reference Material (SRM) 482: A Metallographic Challenge***,” in Proc. of Microscopy and Microanalysis 2002 (in press).

Windsor, E.S., Zeissler, C.J., Wight, S.A., Steel, E.B., and Blackburn, D.H., “***Low Background Glass Substrates for Microanalysis***,” in Proc. of Microscopy and Microanalysis 2002 (in press).

## **2. Talks**

Armstrong, J.T., “***The Accuracy of Quantitative EPMA Analyses of Non-Conductive Oxide and Silicate Phases Using Conventional ZAF and Monte Carlo Correction Procedures***,” Microbeam Analysis Society Workshop on Characterization of Non-Conductive Materials,” Montreal, Quebec, Canada, August 6, 2002. Invited

Armstrong, J.T., “***A Simple Method for Determining Optimum Corrections for High Accuracy EPMA in Difficult Chemical Systems***,” Microscopy and Microanalysis 2002 Conference, Quebec City, Quebec, Canada, August 6, 2002. Invited

Bright, D.S., “***Semi-Automatic Tools to Segment SEM Images of Particles***,” Microscopy and Microanalysis 2002 Conference, Quebec City, Quebec, Canada, August 6, 2002.

Bright, D.S., “***Families of Particle-Like Fractals with Differing Shapes and Boundary Fractal Dimensions***,” Microscopy and Microanalysis 2002 Conference, Quebec City, Quebec, Canada, August 6, 2002.

Bright, D.S., “***Particle-Like Fractal Images for Testing Algorithms that Measure Boundary Fractal Dimension***,” Microscopy and Microanalysis 2002 Conference, Quebec City, Quebec, Canada, August 8, 2002.

Buntin, S.A., “***Multispectral Probes for Materials and Chemical Analysis***,” CombiCat 2001 Conference, Philadelphia, PA, November 16, 2001. Invited

Buntin, S.A., “***Multispectral Imaging for Materials Analysis***,” Combi 2002 Conference, San Diego, CA, January 23, 2002. Invited

Buntin, S.A., “***Oxygen Atom Interactions with Fused Silica:  $^1D$  and  $^3P$  State-Resolved Energy Transfer Dynamics***,” NANO7/ECOSS1 Conference, Malmo, Sweden, June 27, 2002.

Buntin, S.A., “***Nanoscale Characterization of Surfaces and Interfaces: VG-SFG and NSOM***,” University of Essen, Essen, Germany, July 1, 2002. Invited

Buntin, S.A., "***Nanoscale Characterization of Surfaces and Interfaces: VR-SFG and NSOM***," Queen Mary, University of London, London, England, July 3, 2002. Invited

Cavanagh, R., "***From XPS Standards to Near-field Optical Microscopy***." International Symposium of the American Vacuum Society, San Francisco, CA, October 28, 2001.

Cavanagh, R., "***Division Overview***," NIST, Gaithersburg, MD, February 7, 2002.

Chi, P.H., "***Positive Ion Yield Enhancement Using Freon Backfilling***," 15<sup>th</sup> Annual Workshop on Secondary Ion Mass Spectrometry, Clearwater, FL, May 1, 2002.

Conny, J.M., "***Sampling and Analysis of Emissions During the International Crown Fire Modeling Experiment: A Focus on the Carbon Composition of Aerosols***," Tall Timbers Fire Ecology Conference, Kananaskis Village, Alberta, Canada, October 15, 2001. Invited

Conny, J.M., "***Artifacts of Aerosols Collection During Experimental Boreal Forest Fires***," American Association for Aerosol Research Conference, Portland, OR, October 19, 2001.

Conny, J.M., "***Combining Thermal Evolution Analysis with Aromatic Hydrocarbon Analysis to Characterize Particles From Boreal Wildfires***," American Association for Aerosol Research Conference, Portland, OR, October 19, 2001.

Conny, J.M., "***Sampling of Aerosols From Boreal Wildfires for Carbon Speciation: NIST Activities at the International Crown Fire Modeling Experiment, Northwest Territories, Canada***," American Association for Aerosol Research Conference, Portland, OR, October 19, 2001.

Conny, J.M., "***A Response Surface Study to Attain Accuracy in Measuring Atmospheric Black Carbon by Thermal-Optical Methods***," 8<sup>th</sup> International Conference on Chemometrics in Analytical Chemistry, Seattle, WA, September 23, 2002.

Currie, L.A., "***Detection and Quantification Limits: Basic Concepts, International Harmonization, and Outstanding Issues***," Radiochemical Measurements Conference, Honolulu, Hawaii, November 3, 2001. Invited

Currie, L.A., "***On the Radiocarbon Age of the Shroud of Turin: Metrological Controversy, Creative Hypotheses, and the Emerging Discipline of 'Molecular Dating'***," Radiochemical Measurements Conference, Honolulu, Hawaii, November 6, 2001. Invited

Currie, L.A., "***The Remarkable Metrological History of <sup>14</sup>C Dating: From Ancient Egyptian Artifacts to Particles of Soot and Grains of Pollen***." 14th Radiochemical Conference, Prague, Czech Republic, April 15, 2002.

Currie, L.A., ***“Exploratory Data Analysis of Environmental Radioactivity,”*** ENSCO, Inc., Melbourne, FL, May 10, 2002.

Currie, L.A., ***Detection and Quantification Limits: Basic Concepts, International Harmonization, and Outstanding Issues,*** American Chemical Society Meeting, Boston, MA, August 21, 2002. Invited

Etz, E.S., ***“Phase Composition of Plasma-Sprayed Yttria-Stabilized Zirconia Coatings Determined by Micro-Raman Spectroscopy,”*** Federation of Analytical Chemistry and Spectroscopy Societies Meeting, Detroit, MI, October 9, 2001.

Etz, E.S., ***“SRM-2241: Relative Intensity Correction Standard for Raman Spectroscopy with 785 nm Excitation,”*** Federation of Analytical Chemistry and Spectroscopy Societies Meeting, Detroit, MI, October 11, 2001.

Etz, E.S., ***Raman Microspectroscopy of Some High Explosives-Revisited,*** Microscopy and Microanalysis 2002 Meeting, Quebec City, Quebec, Canada, August 6, 2002.

Fahey, A.J., ***“Potential Geological/Cosmochemical Applications of ToF-SIMS; Strengths, Weaknesses and Examples,”*** GEO-SIMS Workshop, Tempe, AZ, October 13, 2001. Invited

Fahey, A.J., ***“The ims-1270 at NIST: Delivery Experiences and Initial Report of Measurements,”*** 15<sup>th</sup> Annual Workshop of Secondary Ion Mass Spectrometry, Clearwater, FL, April 30, 2002.

Fletcher, R.A., ***“The Sources of Diesel Polycyclic Aromatic Hydrocarbons,”*** American Association for Aerosol Research, Portland, OR, October 18, 2001.

Fletcher, R.A., ***“Metrology of Aerosol Concentration,”*** American Association for Aerosol Research, Portland, OR, October 18, 2001.

Fletcher, R.A., ***NIST Chapter Activities,*** National Annual Meeting of Sigma Xi, Raleigh, NC, November 9, 2001.

Fletcher, R.A., ***“Progress in Verifying the M41 Calibrant,”*** CCG-CBD, Working Group, Department of Defense, Crane, IN, April 23, 2002. Invited

Gadzuk, J.W., ***“Resonance Tunneling: From Field Emission to Molecular Electronics with Intermediate Stops; a Thirty Five year NBS/NIST Saga,”*** International Symposium of the American Vacuum Society, San Francisco, CA, October 22, 2001.

Gadzuk, J.W., ***“Focused Inelasticity in Scanning Tunneling Spectroscopy,”*** International Symposium of the American Vacuum Society, San Francisco, CA, October 29, 2001.

Gadzuk, J.W., “*What Molecular Electricians Can Learn From Solid State Tunneling,*” NIST MoleE Group, November 8, 2001.

Gadzuk, J.W., “*Inelastic Quantum Mirages in Scanning Tunneling Spectroscopy,*” Electron and Optical Physics Division Seminar, NIST, January 31, 2002.

Gadzuk, J.W., “*Inelastic Quantum Mirages in Scanning Tunneling Spectroscopy,*” Electron Physics Group Meeting, NIST, February 14, 2002.

Gadzuk, J.W., “*Inelastic Quantum Mirages in Scanning Tunneling Spectroscopy,*” American Physical Society Meeting, Indianapolis, IN, March 20, 2002.

Gadzuk, J.W., “*Scanning Tunneling Spectroscopy of Surface Nanostructures: Mirages, Kondo Systems, Vibrations, and the Kitchen Sink,*” NIST Nanotechnology Open House, June 20, 2002.

Gadzuk, J.W., “*Fano Resonances in Condensed Matter Physics,*” Harvard-Smithsonian Institute Observatory,” Cambridge, MA, July 24, 2002.

Gillen, J.G., “*Secondary Ion Mass Spectrometry Using Cluster Primary Ion Beams,*” 13<sup>th</sup> International Conference on Secondary Ion Mass Spectrometry, Nara, Japan, November 14, 2001. Invited

Gillen, J.G., “*Imaging of High Explosives Using Cluster Secondary Ion Mass Spectrometry,*” 3<sup>rd</sup> International Aviation Security Technology Symposium, Atlantic City, NJ, November 28, 2001.

Gillen, J.G., “*Bevel Depth Profiling Secondary Ion Mass Spectrometry for the 2-Dimensional Characterization of Oxidation in AlGaAs/GaAs Superlattices,*” 15<sup>th</sup> Annual Workshop on Secondary Ion Mass Spectrometry, Clearwater, FL, May 1, 2002.

Gillen, J.G., “*Secondary Ion Mass Spectrometry Using Cluster Primary Ion Beams,*” Desorption 2002 Conference, Estes Park, CO, September 3, 2002. Invited

Hernandez, R., “*Integrated Chemical and Biological Systems in Nanofabricated Structures: Multifunctional Nanoscale Sensors,*” The Pennsylvania State University, University Park, PA, May 6, 2002.

Jach, T., “*Grazing Incidence X-ray Photoemission Spectroscopy: A Method to Study Gate Dielectric Films on Si,*” 2<sup>nd</sup> International Symposium on Practical Surface and Analysis, Nara, Japan, November 20, 2001. Invited

Jach, T., “*Surface Behavior of Congruent LiNbO<sub>3</sub> Domains Under the Action of Applied Fields,*” Workshop on the Fundamental Physics of Ferroelectrics, 2002, Washington, DC, February 6, 2002. Invited

Jach, T., "***NIST X-Ray Metrology of Oxinitride Gate Dielectrics***," Analytical Managers Council Meeting, International SEMATECH, Austin, TX, September 11, 2002. Invited

Klouda, G.A., "***Biogenic and Fossil Contributions to Ambient Aerosol PM-2.5***," American Association for Aerosol Research Conference, Portland, OR, October 16, 2001.

Klouda, G.A., "***Progress on the Production of Filter-Based PM-2.5 Reference Materials***," American Association for Aerosol Research Conference," Portland, OR, October 17, 2001.

Klouda, G.A., "***NIST Low-Level Counting (llc): Microliter Sample Demonstration Project***," TWG Meeting, Murray Hill, NJ, April 23, 2002.

Marinenko, R., "***Chemical Characterization of Silicon-Germanium Single Crystals – Initial Evaluation of the Extent of Heterogeneity***," Microscopy and Microanalysis 2002 Meeting, Quebec City, Quebec, Canada, August 5, 2002.

Marinenko, R.B., "***Standards for Electron Probe Microanalysis, Beware, and Be Careful***," Center for Electron Microscopy, Jozef Stefan Institute, Ljubljana, Slovenia, September 12, 2002.

Michaels, C.A., "***Scanning Near-Field Infrared Microscopy and Spectroscopy with a Broadband Laser Source***," CSTL Colloquium, Gaithersburg, MD, October 1, 2001. Invited

Michaels, C.A., "***Chemical Imaging of Polymer Blend Films Near-Field Vibrational Spectroscopy and Microscopy***," Optical Society of America National Meeting, Long Beach, CA, October 16, 2001.

Michaels, C.A., "***Spectral Imaging with Near-Field Infrared Spectroscopy and Microscopy***," Microscopy and Microanalysis 2002 Conference, Quebec City, Quebec, Canada, August 6, 2002.

Michaels, C.A., "***Near-Field Vibrational Spectroscopy for Nanoscale Chemical Analysis***," Near Field Optics-7 Conference, Rochester, NY, August 13, 2002.

Michaels, C.A., "***Confocal Raman Microscopy of Polyolefin Blends and PVDF/PMMA-co-PEA Films***," Polymer Interface Consortium at PPG Industries, Research and Development Center, Allison Park, PA, September 12, 2002. Invited

Newbury, D.E., "***X-Ray Microanalysis in Variable Pressure and Environmental SEMs***," NIST-Microbeam Analysis Society Workshop on "Understanding the Accuracy Barrier in Quantitative Electron Beam X-Ray Microanalysis and the Role of Standards," NIST, Gaithersburg, MD, April 9, 2002. Invited

Newbury, D.E., ***“X-Ray Microanalysis in Extreme Conditions: Low Voltage SEM,”*** NIST-Microbeam Analysis Society Workshop on “Understanding the Accuracy Barrier in Quantitative Electron Beam X-Ray Microanalysis and the Role of Standards,” NIST, Gaithersburg, MD, April 9, 2002. Invited

Newbury, D.E., ***“Diagnostics for Assessing Spectral Quality for X-Ray Microanalysis in Low Voltage and Variable Pressure/Environmental Scanning Electron Microscopy,”*** Workshop on Characterization of Non-Conductive or Charging Materials by Microbeam Analysis, McGill University, Montreal, Quebec, Canada, August 2, 2002. Invited

Newbury, D.E., ***“‘Standardless’ Quantitative Electron Beam X-Ray Microanalysis: The Situation Remains Caveat Emptor!,”*** Microscopy and Microanalysis 2002 Conference, Quebec City, Quebec, Canada, August 5, 2002. Invited

Newbury, D.E., ***“Low-Overvoltage Microanalysis: An Alternative High Resolution Strategy to Low-Voltage Microanalysis,”*** Microscopy and Microanalysis 2002 Conference, Quebec City, Quebec, Canada, August 6, 2002. Invited

Newbury, D.E., ***“Silicon Drift Detectors: the Revolutionary Evolution of Si-EDS,”*** Division 837 Colloquium in Memoriam Charles Fiori” NIST, Gaithersburg, MD, September 17, 2002.

Newbury, D.E., ***“Desktop Spectrum Analyzer (DTSA): Chuck Fiori’s Legacy to the X-Ray Microanalysis Community,”*** Division 837 Colloquium in Memoriam Charles Fiori,” NIST, Gaithersburg, MD, September 17, 2002.

Powell, C.J., ***“Influence of Elastic-Electron Scattering on Measurements of Silicon Dioxide Film Thicknesses by X-Ray Photoelectron Spectroscopy,”*** 9<sup>th</sup> European Conference on Applications of Surface and Interface Analysis, Avignon, France, October 1, 2001.

Powell, C.J., ***“The NIST Electron Effective-Attenuation-Length Database,”*** 9<sup>th</sup> European Conference on Applications of Surface and Interface Analysis, Avignon, France, October 2, 2001.

Powell, C.J., ***“Influence of Elastic Electron Scattering on Measurements of Silicon Dioxide Film Thicknesses by X-ray Photoelectron Spectroscopy,”*** Ninth Topical Conference on Quantitative Surface Analysis, San Jose, CA, October 26, 2001.

Powell, C.J., ***“The NIST Electron Effective-Attenuation-Length Database,”*** Ninth Topical Conference on Quantitative Surface Analysis, San Jose, CA, October 26, 2001.

Powell, C.J., *"Investigations of Electron Emission and Scattering Phenomena at NIST,"* International Symposium of the American Vacuum Society, San Francisco, CA, October 29, 2001.

Powell, C.J., *"Comparisons of Practical Effective Attenuation Lengths and Inelastic Mean Free Paths for Applications in Auger Electron Spectroscopy and X-Ray Photoelectron Spectroscopy,"* International Symposium of the American Vacuum Society, San Francisco, CA, October 30, 2001.

Powell, C.J., *"NIST Data Resources for Surface Analysis by Auger Electron Spectroscopy and X-ray Photoelectron Spectroscopy,"* International Symposium on Practical Surface Analysis, Nara, Japan, November 19, 2001.

Powell, C.J., *"Comparisons of Practical Effective Attenuation Lengths and Inelastic Mean Free Paths for Applications in Auger Electron Spectroscopy and X-ray Photoelectron Spectroscopy,"* International Symposium on Practical Surface Analysis, Nara, Japan, November 19, 2001.

Powell, C.J., *"Improvements in the Reliability of X-Ray Photoelectron Spectroscopy for Surface Analysis,"* Pittcon 2002, New Orleans, LA, March 18, 2002. Invited.

Powell, C.J., *"NIST Data Resources for Surface Analysis by Auger Electron Spectroscopy and X-Ray Photoelectron Spectroscopy,"* International Workshop on X-Ray Photoelectron Spectroscopy: From Spectra to Results - Towards an Expert System, St. Malo, France, April 22, 2002.

Powell, C.J., *"Relations Between Electron Effective Attenuation Lengths and Inelastic Mean Free Paths for Applications in Auger Electron Spectroscopy and X-Ray Photoelectron Spectroscopy,"* International Workshop on Electron Inelastic Mean Free Paths, Prague, Czech Republic, July 4, 2002. Invited

Powell, C.J., *"NIST Databases for Electron Spectroscopy,"* International Workshop on Electron Inelastic Mean Free Paths, Prague, Czech Republic, July 4, 2002.

Powell, C.J., *"Reliability of the TPP-2M Predictive Equation for Electron Inelastic Mean Free Paths,"* International Workshop on Electron Inelastic Mean Free Paths, Prague, Czech Republic, July 4, 2002.

Powell, C.J., *"NIST Data Resources for Surface Analysis by Auger Electron Spectroscopy and X-ray Photoelectron Spectroscopy,"* 12th International Conference on Quantitative Surface and Nano-Analysis, Guildford, UK, July 8, 2002.

Powell, C.J., *"Analysis Area and Sample Area Viewed by the Analyzer in a Scanning Auger Microscope,"* 12th International Conference on Quantitative Surface and Nano-Analysis, Guildford, UK, July 8, 2002.

Powell, C.J., "**Comparisons of Practical Effective Attenuation Lengths and Inelastic Mean Free Paths for Applications in Auger Electron Spectroscopy and X-ray Photoelectron Spectroscopy,**" 12th International Conference on Quantitative Surface and Nano-Analysis, Guildford, UK, July 11, 2002.

Powell, C.J., "**Reliability of the TPP-2M Predictive Equation for Electron Inelastic Mean Free Paths,**" 12th International Conference on Quantitative Surface and Nano-Analysis, Guildford, UK, July 11, 2002.

Powell, C.J., "**Improved Reliability of Surface Analysis by Auger Electron Spectroscopy and X-Ray Photoelectron Spectroscopy: The Contributions of Martin Seah,**" Symposium on Surface Analysis and the New Nanotechnology World, National Physical Laboratory, Teddington, UK, July 12, 2002.

Richter, L.J., "**Buried and Free Polymer Interfaces Studied by Vibrationally-Resonant Sum-Frequency,**" Dow Chemical, Midland, MI, October 17, 2001.

Richter, L.J., "**Reconstruction of Buried Polymer Interfaces Observed by Sum-Frequency Generation,**" International Symposium of the American Vacuum Society, San Francisco, CA, October 29, 2001.

Richter, L.J., "**Buried and Free Polymer Interfaces Studied by Vibrationally-Resonant Sum-Frequency Generation,**" Pittcon 2002 Conference, New Orleans, LA, March 18, 2002.

Richter, L.J., "**Vibrationally-Resonant Sum-Frequency Generation Studies of Buried Interfaces,**" Ohio State University, Columbus, OH, April 1, 2002.

Roberson, S.V., "**Time-of-Flight Secondary Ion Mass Spectrometry (TOF-SIMS) for Characterizing Combinatorial Bio Surfaces,**" 13<sup>th</sup> International Secondary Ion Mass Spectrometry Conference, Nara, Japan, November 12, 2001.

Roberson, S.V., "**Characterization of High Explosive Particles using Secondary Ion Mass Spectrometry,**" 15th Annual Workshop on Secondary Ion Mass Spectrometry, Clearwater, FL, May 1, 2002.

Roberson, S.V., "**Surface Characterization at NIST,**" Mid-Atlantic Regional Meeting of the American Chemical Society, George Mason University, Fairfax, VA, May 29, 2002.

Robey, S.W., "**Surface Dynamics During Etching of GaAs(001),**" International Symposium of the American Vacuum Society, San Francisco, CA, October 31, 2001.

Scott, J.H., "**Analytical Electron Microscopy,**" Shafer Vallecitos Laboratory, Sunol, CA, February 12, 2002.

Scott, J.H., "***XML for Microanalysis: EMSA/MAS Spectrum File Format 2.0***," Microscopy and Microanalysis 2002 Meeting, Quebec City, Quebec, Canada, August 8, 2002.

Scott, J.H., "***Multispectral and Hyperspectral Analysis at NIST***," Celera Genomics Group, Rockville, MD, August 15, 2002.

Scott, J.H., "***Gate Dielectric Thickness Measurements***," Analytical Laboratory Managers Council Meeting, Austin, TX, September 11, 2002.

Simons, D.S., "***Reference Materials for Secondary Ion Mass Spectrometry: Philosophy, Development, and Results***," International Symposium of the American Vacuum Society, San Francisco, CA, October 30, 2001. Invited

Simons, D.S., "***Development of a Phosphorus-Implant-in-Silicon Calibration Standard for Secondary Ion Mass Spectrometry***," 13<sup>th</sup> International Secondary Ion Mass Spectrometry Conference, Nara, Japan, November 13, 2001.

Simons, D.S., "***Report on Si-Ge Interactive Reference Material***," 15th Annual Workshop on Secondary Ion Mass Spectrometry, Clearwater, FL, May 2, 2002.

Small, J.A., "***Electron Backscatter Diffraction (EBSD) of Single Particles***," International Symposium of the American Vacuum Society Meeting, Santa Clara, CA, February 13, 2002. Invited

Small, J.A., "***A Well Dressed Microscope: Practical Experience with Microcalorimeter and Silicon Drift Detector Systems***," Microscopy and Microanalysis 2002 Meeting, Quebec City, Quebec, Canada, August 8, 2002. Invited

Small, J.A., "***Update on NIST Microcalorimeter Detector***," NIST Division 837 Seminar, September 17, 2002. Invited

Small, J.A., "***Particle Analysis in the EPMA/SEM: New Ways to Solve Old Problems***," Minneapolis Microscopy Society Meeting, Minneapolis, MN, September 19, 2002. Invited

Small, J.A., "***Advances in X-Ray Spectrometry: New, High Resolution, High-Speed Detectors for Microanalysis***," Analytical-Nuclear-Environmental Seminar Program, University of Maryland, College Park, MD, September 27, 2002. Invited

Steel, E.B., "***Reference Materials for Specialty Applications: Thin Films, Coatings, Particles, Powders, and More***," at Understanding the Accuracy Barrier of Quantitative Electron Beam X-ray Microanalysis and the Role of Standards, NIST, Gaithersburg, MD, April 10, 2002.

Steel, E.B., ***“Industry Needs in Microanalysis Education,”*** to representatives from 10 universities and federal agencies, Lehigh University, Bethlehem, PA, June 19, 2002.

Steel, E.B., ***“Chemical Nanoanalysis,”*** NIST Nanotechnology Open House, NIST, Gaithersburg, MD, June 20, 2002. (Invited)

Steel, E.B., ***“Microanalysis for Trace Particle Forensics,”*** FBI Research Laboratory, Quantico, VA, July 10, 2002.

Steel, E.B., ***“Approaches to Characterization of Surface Contamination,”*** Orthopedic Surgical Manufacturers Association Meeting, Plymouth, MA, July 19, 2002. (Invited)

Steel, E.B., ***“Particle Contamination Characterization,”*** NIST Day at SEMATECH Austin, TX, July 30, 2002.

Steel, E.B., ***“Gate Dielectric Thin Film Characterization,”*** NIST Day at SEMATECH, Austin, TX, July 30, 2002.

Stranick, S.J., ***“Chemical Imaging With Near-Field Scanning Optical Microscopy,”*** Federation of Analytical Chemistry and Spectroscopy Societies 2001, Detroit, MI, October 10, 2001. Invited

Stranick, S.J., ***“Nano-optics for Chemical and Material Analysis on the Nanoscale,”*** ACS Symposium “Frontiers in Analytical Chemistry,” Rochester, NY, October 11, 2001. Invited

Stranick, S.J., ***“Nano-optics for Chemical and Material Analysis of Thin Films,”*** CARB Biotechnology Meeting, Rockville, MD, November 8, 2001. Invited

Stranick, S.J., ***“Near-Field Scanning Optical Microscopy and Spectroscopy,”*** Department of Chemistry Colloquium Series, University of Pittsburgh, Pittsburgh, PA, November 15, 2001. Invited

Stranick, S.J., ***“Nano-optics for Chemical and Material Analysis on the Nanoscale,”*** Exxon Mobil World Wide Characterization Meeting, Houston, TX, December 6, 2001. Invited

Stranick, S.J., ***“Nano-optics for Chemical and Material Analysis on the Nanoscale,”*** ExxonMobil Chemical Company, Central Research and Development, Houston, TX, December 7, 2001. Invited

Stranick, S.J., ***“Near-Field Optics for Chemical and Material Analysis on the Nanoscale,”*** National Institutes of Health, Bethesda, MD, March 13, 2002. Invited

Stranick, S.J., "***Nano-optics for Chemical and Material Analysis on the Nanoscale,***" Georgia Institute of Technology, School of Chemistry and Biochemistry Colloquium Series, Atlanta, GA, March 28, 2002. Invited

Stranick, S.J., "***Near-Field Optics for Chemical and Material Analysis on the Nanoscale,***" American Chemical Society, 161<sup>st</sup> Meeting, Savannah, GA, April 29, 2002. Invited

Stranick, S.J., "***Near-Field Optics for Chemical and Material Analysis on the Nanoscale,***" Pfizer Global Research & Development, Ann Arbor, MI, June 6, 2002. Invited

Stranick, S.J., "***Near-Field Optics for Chemical and Material Analysis on the Nanoscale,***" NFO-7 Near-Field Optics and Related Techniques, Rochester, NY, August 12, 2002.

Stranick, S.J., "***Near-Field Optics for Chemical and Materials Analysis on the Nanoscale,***" American Chemical Society Meeting, Boston, MA, August 18, 2002. Invited

Turner, S., "***Morphological Characterization of Nanoparticles by Transmission Electron Microscopy,***" Materials Research Society Meeting, Boston, MA, November 27, 2001.

Turner, S., "***Systematic Characterization of Reciprocal Space of SAED: Advantages of a Double-Tilt, Rotate Holder,***" Microscopy and Microanalysis 2002 Meeting, Quebec City, Quebec, Canada, August 5, 2002.

Verkouteren, J.R., "***The Role of NIST in Asbestos Accreditation,***" The Vermiculite Association Annual Meeting 2001, Boston, MA, November 15, 2001. Invited

Verkouteren, J.R., "***Powder X-Ray Diffraction for Asbestos Analysis,***" International Centre for Diffraction Data (ICDD), Concordville, PA, March 20, 2002.

Verkouteren, J.R., "***Optical Characteristics and Mineralogy of Environmental Asbestos,***" ASTM 2002 Johnson Conference on Asbestos, Johnson, VT, July 25, 2002.

Verkouteren, J.R., "***Development of a PLM Technique for Quantitative Analysis of Asbestos at 0.01 wt.%,***" ASTM 2002 Johnson Conference on Asbestos, Johnson, VT, July 26, 2002.

Verkouteren, R.M., "***Report on the NIST-NOAA-Industry Workshop on Atmospheric Measures and Standards,***" Air Quality Subcommittee, Office of Science Technology Policy-Committee for the Environmental and Natural Resources, Washington, DC, November 15, 2001. Invited

Verkouteren, R.M., "***Measurements and Standards to Support Research of Atmospheric Aerosols and Particulate Matter: U.S. Industry Needs and the NIST Role,***" Surface and Microanalysis Science Division Seminar, NIST, Gaithersburg, MD, March 15, 2002.

Verkouteren, R.M., "***PM Metrology (not Meteorology!): Developing Measurements and Standards to Support Research of Atmospheric Particulate Matter,***" Air Quality Research Subcommittee, Office of Science Technology Policy-Committee for the Environmental and Natural Resources, Washington, DC, March 21, 2002. Invited

Verkouteren, R.M., "***Advancements in Carbonaceous Metrology to Support PM Research – A NIST Proposal,***" Air Quality Research Subcommittee, Office of Science Technology Policy-Committee for the Environmental and Natural Resources, Washington, DC, July 18, 2002. Invited

Walker, M.L., "***The Effect of Nucleating Agents on the Crystallization of Polypropylene Thin Films,***" National Organization for the Professional Advancement of Black Chemists and Chemical Engineers Meeting, New Orleans, LA, March 25, 2002.

Walker, M.L., "***The Effect of Nucleating Agents on the Crystallization of Polypropylene Thin Films,***" Polymer Physics Gordon Conference, Salve Regina University, Newport, RI, August 14, 2002.

Wilson, P., "***Correlation of Molecular Order at Buried Polymer Interfaces with Thin-Film Adhesion,***" University of Missouri, Columbia, MO, March 4, 2002.

Wilson, P., "***Correlation of Molecular Orientation with Adhesion at Polymer/Solid Interfaces,***" Milliken Research Corporation, Spartanburg, SC, March 28, 2002.

Wilson, P., "***Correlation of Molecular Orientation with Adhesion at Polymer/Solid Interfaces,***" General Electric Corporate Research, Niskayuna, NY, April 9, 2002.

Windsor, E.S., "***Standard Reference Material (SRM) 482 33 Years Later,***" NIST-MAS Special Topics Workshop: Understanding the Accuracy Barrier in Quantitative Electron Probe Microanalysis and the Role of Standards NIST, Gaithersburg, MD, April 10, 2002.

Windsor, E.S., "***Standard Reference Material (SRM) 482: A Metallographic Challenge,***" Microscopy and Microanalysis 2002 Conference, Quebec City, Quebec, Canada, August 6, 2002.

Windsor, E.S., "***Low Background Glass Substrates for Microanalysis,***" Microscopy and Microanalysis 2002 Conference, Quebec City, Quebec, Canada, August 6, 2002.

Yang, C., "***An In Situ, Vibrationally-Resonant Sum Frequency Spectroscopy Study of the Self-Assembly of Dictadecyl Disulfide on Gold,***" CLEO/QELS 2002 Conference, Los Angeles, CA, May 22, 2002.

### **3. Cooperative Research and Development Agreements (CRADAs) and Consortia**

“Characterization and Modeling of Polymeric Systems Interphases” with Dow Chemical Company, PPG Industries, Inc., and Visteon (an Enterprise of Ford Motor Company)  
Chris Michaels, Charles Han, Tinh Nguyen, Nick Martys, Sonya Roberson and Marlon Walker

“Evaluation of Near-Field Spectroscopic Probes of Polymeric and Catalytic Materials,”  
with Dow Chemical Company, Stephan J. Stranick and Chris A. Michaels

### **4. Patents Issued**

System for Detecting Atomic or Molecular Spectra of a Substance, and/or Threshold Phenomena Associated with the Same, P.S. Weiss and S.J. Stranick, United Kingdom Patent awarded (2002).

System zum Feststellen von Atom- oder Molekularspektren und/oder Damit Verbundenen Schwellenerscheinungen, P.S. Weiss and S.J. Stranick, German Patent awarded (2002).

Systeme de Detection du Spectre Atomique ou Moleculaire et/ou des Phenomenes de Seuil Associes, P.S. Weiss and S.J. Stranick, Swiss Patent awarded (2002).

### **5. Measurement Services**

#### **5a. SRM Activities**

SRM 2133 Phosphorus Implant in Silicon Depth Profile Standard (D. Simons)  
SRM 2784 Urban Dust Reference Material (G. Klouda)  
RM 85xx International Comparisons (R.M. Verkouteren)  
RM 8559 Isotopic Natural Gas Standards (R.M. Verkouteren)  
RM 8560 Isotopic Natural Gas Standards (R.M. Verkouteren)  
RM 8561 Isotopic Natural Gas Standards (R.M. Verkouteren)

#### **5b. SRD Activities**

SRD 20 X-Ray Photoelectron Spectroscopy Database (Version 3.2 released January, 2002) C.J. Powell  
SRD 64 Electron Elastic-Scattering Cross-Section Database (Version 2.0 released in April, 2000; Version 3.0 to be released fall, 2002) C.J. Powell  
SRD 71 Electron Inelastic-Mean-Free-Path Database (Version 1.1 released December, 2000) C.J. Powell  
SRD 77 Database for Trace Atmospheric Constituents (J. Conny)  
SRD 82 Electron Effective Attenuation-Length Database (Version 1.0 released September, 2001) C.J. Powell

## **5c. Calibrations**

None

## **6. Committee Assignments**

### **Armstrong, J.T.**

Advisory Group for ISO/TC202 on Microbeam Analysis (Member)

ASTM E-42 on Surface Analysis (Member)

ASTM E-42 on Terminology (Member)

ASTM E42.03 on Auger-Electron Spectroscopy and X-Ray Photoelectron Spectroscopy (Member)

ASTM E42.15 Electron Probe Microanalysis/Electron Microscopy (Member)

ASTM E42.96 US Tag for ISO/TC202/SC2 on Microbeam Analysis (Member)

CSTL Colloquium Committee

### **Buntin, S.A.**

American Chemical Society, Division of Physical Chemistry (Executive Committee Member)

### **Conny, J.M.**

ASTM D-22 Sampling and Analysis of Atmospheres (Member)

### **Currie, L.A.**

International Steering Committee for Black Carbon Reference Materials (Member)

IUPAC, Analytical Chemistry Division Committee (Associate Member)

### **Etz, E.S.**

ASTM E-13 Molecular Spectroscopy and Chromatography (Member)

ASTM E-13.08 Raman Spectroscopy (Member)

ASTM E-13.10 Molecular Spectroscopic Optical Imaging (Member)

Microbeam Analysis Society (President 2002-2003)

Organization for the Prohibition of Chemical Weapons (OPCW): U.S. Representative to the Task Force on Analytical Database to the Verification Division of the OPCW, The Hague, The Netherlands

### **Fahey, A.J.**

NASA Planetary Instrument Definitions Proposal Review Panel

ASTM E-42 Surface Analysis (Member)

ASTM E-42.06 Secondary Ion Mass Spectrometry (Member)

**Fletcher, R.A.**

NFPA T2.9 Contamination Control Committee  
U.S. TAG ISO/TC 131 Fluid Power Systems (Technical Advisor)  
U.S. TAG ISO/TC 131SC6 on Contamination Control and Hydraulic Fluids  
(Technical Advisor)

**Gadzuk, J.W.**

Office of Information Services/Library (CSTL Subject Specialist/Advisor)  
Washington Editorial Review Board (CSTL representative)

**Gillen, J.G.**

ASTM E42 Surface Analysis  
ASTM E42.06 Subcommittee on Secondary Ion Mass Spectrometry (Chairman)

**Jach, T.**

Synchrotron Radiation Instrumentation Collaborative Access Team, Applied  
Photon Source, Argonne National Laboratory (Member)  
X24A Beamline, National Synchrotron Light Source, Brookhaven National  
Laboratory (Director and Spokesperson)

**Klinedinst, D.**

ASTM D20.96 Standard for Biobased Products Identification (Member)

**Klouda, G.A.**

Equal Employment Opportunity Counselor

**Marinenko, R.B.**

Advisory Group for ISO TC202 on Microbeam Analysis (Member)  
ASTM E42 Surface Analysis  
ASTM E42.15 Electron Probe Microanalysis/Electron Microscopy (Member)  
ASTM E42.96 US TAG for ISO TC202/SC2 on Microbeam Analysis (Member)  
Microbeam Analysis Society, Editor of MicroNews (Newsletter, pub. 3x/yr)

**Newbury, D.E.**

ASTM E42 Surface Analysis (Member)  
ISO TC202 on Microbeam Analysis (Member)  
CSTL/837: Committee to Organize Workshop on Limits to Accuracy in Quantitative  
Electron Probe Microanalysis  
Technical Program Committee for the 2002 Microscopy and Microanalysis Conference  
SCANNING: Technical Program Committee for the 2002-2003 Conferences

**Powell, C.J.**

ASTM Committee E-42 on Surface Analysis (Member)  
ASTM Subcommittee E-42.02 on Terminology (Member)  
ASTM Subcommittee E-42.03 on Auger-Electron Spectroscopy and X-Ray

Photoelectron Spectroscopy (Member)  
Executive Committee, Applied Surface Science Division of the American Vacuum Society (Member)  
International Advisory Committee, Second International Symposium on Practical Surface Analysis (Member).  
International Workshop on X-Ray Photoelectron Spectroscopy: From Spectra to Results – Towards an Expert System (Co-Chairman)  
Organizing Committee, 9<sup>th</sup> Topical Conference on Quantitative Surface Analysis (Chairman)  
Report Committee on Elastic Scattering of Electrons and Positrons, International Commission on Radiation Units and Measurement (Member)  
SEMATECH Analytical Laboratory Managers Council (Member)  
Subcommittee 5 on Auger Electron Spectroscopy of ISO/TC 201 (Chairman)  
Surface Chemical Analysis Technical Working Area, Versailles Project on Advanced Materials and Standards (U.S. Representative and Chairman)  
Technical Committee 201 on Surface Chemical Analysis of the International Organization for Standards (U.S. Delegate)  
U.S. Technical Advisory Group for ISO/TC 201 on Surface Chemical Analysis (Member)

**Richter, L.J.**

Division representative to the CSTL Colloquium Committee

**Roberson, S.V.**

ASTM E42.06 Secondary Ion Mass Spectrometry

**Scott, J.H.**

ASTM E42.15 Electron Probe Microanalysis/Electron Microscopy (Member)  
ASTM E42.96 US Tag for ISO/TC202/SC2 on Microbeam Analysis (Member)  
ISO/Technical Committee 202/Subcommittee 3 (Secretary)

**Simons, D.S.**

ASTM E-42 Surface Analysis  
ASTM E42.06 Secondary Ion Mass Spectrometry  
ISO TC201 Surface Chemical Analysis – SC6 Secondary Ion Mass Spectrometry (Chairman of U.S. Delegation)  
NIST Ionizing Radiation Safety Committee

**Small, J.A.**

Advisory Group for ISO TC202 on Microbeam Analysis (Member)  
ASTM D22 Sampling and Analysis of Atmospheres (Member)  
ASTM D22-05 Indoor Air (Member)  
ASTM D22-05.01 Working Group Asbestos (Member)  
ASTM E42-15 Electron Probe Microanalysis/Electron Microscopy (Chair)

ASTM E42-96, US TAG for ISO TC202 Microbeam Analysis (Chair)  
ISO TC202/SC1 (Secretary)  
Long Range Planning Committee for Microbeam Analysis Society (Chair)

**Stranick, S.J.**

American Chemical Society, Frontiers of Chemistry Organization Committee for  
2002 German-American Symposium (Chairman)  
Division Laser Safety Officer  
NFO-7 Near-Field Optics and Related Techniques (Co-Chairman)

**Steel, E.B.**

ASTM D22 Sampling and Analysis of Atmospheres (Member)  
ASTM D22.05 Indoor Air

**Turner, S.**

ASTM D22 Sampling and Analysis of Atmospheres (Member)  
ASTM D22.07 Sampling and Analysis of Asbestos (Member)

**Verkouteren, J.R.**

ASTM 2002 Johnson Conference: A Review of Asbestos Monitoring Methods and  
Results for the New York World Trade Center, Libby Vermiculite, and Fibrous  
Talc, Johnson, VT, July 23, 2002 (Session Chair)  
International Center for Diffraction Data (ICDD), Secretary, Ceramics Subcommittee  
NIST Workshop: Addressing Continuing Measurement Problems for Fibrous Talc,  
held at ASTM 2002 Johnson Conference, July 24, 2002 (Workshop organizer and  
moderator)

**Verkouteren, R.M.**

IAEA Consultant on Reference Materials and Analytical Quality of Isotope Analysis of  
Water and Environmental Samples  
OSTP/CENR Air Quality Research Subcommittee

**Wight, S.A.**

ASTM Committee E-42 on Surface Analysis  
ASTM E42.15 Electron Probe Microanalysis/Electron Microscopy (Member)  
ASTM E42.96 U.S. TA/ISO/TC202 Microbeam Analysis (Member)

**Windsor, E.S.**

Division 837 Safety Representative

**Zeissler, C.J.**

NIST Ionizing Radiation Safety Committee Substitute Member  
Safety Representative for Ionizing Radiation, Division 837

## **7. Editorships**

### **Newbury, D.E.**

Journal of Microscopy  
Microscopy and Microanalysis  
SCANNING

### **Powell, C.J.**

Applied Surface Science (Editorial Board)  
Journal of Electron Spectroscopy and Related Phenomena (Editorial Board)  
Surface and Interface Analysis (Editorial Board)

### **Simons, D.**

Surface Science Spectra (Editorial Board)

### **Stranick, S.J.**

Anisotropic Nanoparticles-Synthesis, Characterization and Applications," MRS  
Proceedings Volume 635  
Encyclopedia of Nanosciences and Nanotechnology," (Editorial Board)

### **Zeissler, C.J.**

Journal of Research of the National Institute of Standards and Technology (Editorial  
Board)

## **8. Seminars**

### **October 23, 2001**

Wolfgang Werner, Technical University of Vienna, "Database for Quantitative Electron Spectroscopy Techniques: Motivation, Status, and Perspective," (Division Sponsor: C.J. Powell)

### **December 11, 2001**

Neal Shinn, Sandia National Laboratory, Albuquerque, NM, "Nanoscience and Nanotechnology at the Los Alamos/Sandia Center for Integrated Nanotechnologies," (Division Sponsor: S. Buntin)

### **February 27, 2002**

James D. Batteas, City University of New York, Staten Island, NY, "Caution: Molecular Forces at Work," (Division Sponsor: S. Buntin)

### **June 14, 2002**

Babak Nikobakht, Georgia Institute of Technology, Atlanta, GA, "Colloidal Gold Nanorods: Self-Assembly and Surface-Enhanced Raman Scattering," (Division Sponsor: C. Michaels)

## **9. Conferences/Workshops/Sessions Sponsored/Co-Sponsored**

American Chemical Society and GDCh German-American Symposium on the Frontiers of Chemistry, Durham, NH, August 2002 (S.J. Stranick, chairman)

American Chemical Society and GDCh German-American Symposium on the Frontiers of Chemistry, "Nano-Optics Session", Durham, NH, August 2002 (S.J. Stranick, chairman)

American Physical Society Symposium "Atomic Dynamics in Optical Lattices," Indianapolis, IN, March 20, 2002 (J.W. Gadzuk, invited chair)

Institute for Theoretical Atomic, Molecular, and Optical Physics Symposium, "Resonances and Reflections: Profiles of Ugo Fano's Physics and Its Influences," Harvard University, Cambridge, MA, July 24-26, 2002 (J. W. Gadzuk, invited organizer/speaker)

International Workshop on X-Ray Photoelectron Spectroscopy: From Spectra to Results - Towards an Expert System, St. Malo, France, April 22-26, 2002 (C.J. Powell, co-chairman)

Material Research Society Symposium "Biologically Inspired Hybrid Nano-Materials," MRS 2002, Boston, MS, November 2002 (S. Stranick, organizer)

Ninth Topical Conference on Quantitative Surface Analysis, Morgan Hill, CA, October 26-27, 2001 (C.J. Powell, chairman)

NBS-NIST Centennial Session, International Symposium of the American Vacuum Society, San Francisco, CA, October 28, 2001 (C.J. Powell, organizer)

NIST Centennial Symposium: Aerosol and Particle Metrology and Calibration (G. Mulholland and R. Fletcher), 2001-2002

NIST-MAS Topical Workshop, "Understanding the Accuracy Barrier of Quantitative Electron Beam X-Ray Microanalysis and the Role of Standards, NIST, April 8-11, 2002 (R.B. Marinenko and D. Newbury)

Near-Field Optics-7 Near-Field Optics and Related Techniques," Rochester, NY, August 2002. (S. Stranick, chairman)

PittCon Symposium "Near-Field Spectroscopy: Chemical Imaging Below the Diffraction Limit," PittCon 2002, New Orleans, LA, March 19, 2002 (S. Stranick, organizer)

Twentieth Annual American Association for Aerosol Research, Portland, OR, October 18, 2001 (Robert Fletcher)